

ABSTRACT OF THE DISCLOSURE

To render a polymer electrolyte fuel cell and a power-generating system with polymer electrolyte fuel cells, simple, compact and lightweight, the following
5 measures are taken. A plurality of reactant-gas supplying separator are provided, each on at least one surface of each unit cell. Each reactant-gas supplying separator has fuel-gas supplying passages such as grooves in one surface, and oxidizer-gas supplying
10 passages such as grooves in the other surface. Each unit cell comprises a catalyst layer and an electrically conductive, porous water-repellant layer provided at least between the catalyst layer and the grooves. The system comprises water-supplying means
15 for supplying water in liquid state to a fuel-gas inlet section and a water-amount control means for controlling the amount of water to be supplied to the fuel-gas inlet section.